NATIONAL SCIENCE FOUNDATION

Award Notice

Award Number (FAIN): 2100961

Managing Division Abbreviation: DRL

Amendment Number: 001

RECIPIENT INFORMATION

Recipient (Legal Business Name): PRESIDENT AND FELLOWS OF HARVARD COLLEGE
Recipient Address: 1033 MASSACHUSETTS AVE STE 3 CAMBRIDGE, MA 02138-5366
Official Recipient Email Address: [redacted]
Unique Entity Identifier (UEI): LN53LCFJFL45

AMENDMENT INFORMATION

Amendment Type: Other Admin No Fund Actions
Amendment Date: 05/01/2025
Amendment Number: 001
Proposal Number: Not Applicable
Amendment Description:

The purpose of this amendment is to:

- Change the award end date from 08/31/2025 to 04/25/2025.
- This action is in accordance with the award termination notice dated 04/25/2025.

Except as modified by this amendment, the award conditions remain unchanged.

PROJECT PERSONNEL

Principal Investigator: [redacted] **Email:** [redacted]

Organization: PRESIDENT AND FELLOWS OF HARVARD COLLEGE

NSF CONTACT INFORMATION

Managing Grants Official
(Primary Contact)
Name: Tracy N. Shields
Email: tshields@nsf.gov
Phone: (703) 292-4882

Awarding Official
Name: Denise M. Martin
Email: dmartin@nsf.gov

Managing Program Officer
Name: Toya NA Frank
Email: tfrank@nsf.gov
Phone: (703) 292-2255

NATIONAL SCIENCE FOUNDATION

Award Notice

Award Number (FAIN): 2116543
Managing Division Abbreviation: BCS **Amendment Number:** 000

AWARDEE INFORMATION

Award Recipient: Harvard College, President & Fellows of Harvard University
Awardee Address: 1033 MASSACHUSETTS AVE 5th Floor Cambridge, MA 02138-5369
Official Awardee Email Address: [redacted]
Unique Entity Identifier (DUNS ID): 082359691

AMENDMENT INFORMATION

Amendment Type: New Project
Amendment Date: 06/15/2021
Amendment Number: 000
Proposal Number: 2116543
Amendment Description:

The National Science Foundation hereby awards a Standard Grant for support of the project described in the proposal referenced above .

It is the grantee's responsibility to ensure that any human subjects work conducted under this award has an Institutional Review Board (IRB) approval, where required, and that such approval remains valid at all times that human subjects work is conducted under the award. Failure to comply with this condition will result in suspension and/or termination of the award.

Funds provided for participant support may not be diverted by the awardee to other categories of expense without the prior written approval of the cognizant NSF Program Officer. Since participant support cost is not a normal account classification, the awardee organization must be able to separately identify participant support costs. It is highly recommended that separate accounts, sub-accounts, sub-task, or sub-ledgers be established to accumulate these costs. The awardee should have written policies and procedures to segregate participant support costs.

Incentive payments or gifts to participants must be made in accordance with written institutional policies and procedures and supported by auditable documentation. The allowability of these costs will ultimately be based on the awardee institution's ability to adequately demonstrate that the incentives have been disbursed in accordance with its policies and procedures.

AWARD INFORMATION

Award Number (FAIN): 2116543
Award Instrument: Standard Grant
Award Date: 06/15/2021
Award Period of Performance: Start Date: 07/01/2021 End Date: 06/30/2024
Project Title: Social Structure Learning
Managing Division Abbreviation: BCS
Research and Development Award: Yes
Funding Opportunity: PD 98-1332 Social Psychology
CFDA Number and Name: 47.075 Social, Behavioral, and Economic Sciences

FUNDING INFORMATION

Amount Obligated by this Amendment: $604,296
Total Intended Award Amount: $604,296
Total Approved Cost Share or Matching Amount: $0
Total Amount Obligated to Date: $604,296
Expenditure Limitation: Not Applicable

PROJECT PERSONNEL

Principal Investigator: [redacted] **Email:** [redacted] **Institution:** Harvard University

Co-Principal Investigator: [redacted] **Email:** [redacted] **Institution:** Harvard University

NSF CONTACT INFORMATION

Managing Grants Official
(Primary Contact)
Name: Christine Castell
Email: ccastell@nsf.gov

Awarding Official
Name: Christine Castell
Email: ccastell@nsf.gov

Managing Program Officer
Name: Steven James Breckler
Email: sbreckle@nsf.gov

GENERAL TERMS AND CONDITIONS

This is awarded pursuant to the authority of the National Science Foundation Act of 1950, as amended (42 U.S.C. 1861-75) and is subject to Research Terms and Conditions (RTCs) dated 11/12/2020, and NSF Agency Specific Requirements, dated 11/12/2020, available at https://www.nsf.gov/awards/managing/rtc.jsp.

This institution is a signatory to the Federal Demonstration Partnership (FDP) Phase VI Agreement which requires active institutional participation in new or ongoing FDP demonstrations and pilots.

BUDGET

A. Senior Personnel	
Senior Personnel Count	6.00
Senior Personnel Calendar Months	3.00
Senior Personnel Academic Months	0.00
Senior Personnel Summer Months	0.00
Senior Personnel Amount	$51,029
B. Other Personnel	
Post Doctoral Scholars	
Post Doctoral Count	3.00
Post Doctoral Calendar Months	36.00
Post Doctoral Academic Months	0.00
Post Doctoral Summer Months	0.00
Post Doctoral Amount	$169,159
Other Professionals	
Other Professionals Count	0.00
Other Professionals Calendar Months	0.00
Other Professionals Academic Months	0.00
Other Professionals Summer Months	0.00
Other Professionals Amount	$0
Graduate Students	
Graduate Students Count	0.00
Graduate Students Amount	$0
Undergraduate Students	
Undergraduate Students Count	0.00
Undergraduate Students Amount	$0
Secretarial - Clerical	
Secretarial - Clerical Count	0.00
Secretarial - Clerical Amount	$0
Other	
Other Count	0.00
Other Amount	$0
Total Salaries and Wages (A+B)	$220,188
C. Fringe Benefits	$56,328
Total Salaries, Wages, Fringe Benefits (A + B + C)	$276,516
D. Equipment	$0

E. Travel	
Domestic	$13,500
International	$0
F. Participant Support Costs	
Participant Support Costs Stipends	$21,000
Participant Support Costs Travel	$2,400
Participant Support Costs Subsistence	$9,000
Participant Support Costs Other	$22,476
Total Number of Participants	6.00
Total Participant Costs (F)	$54,876
G. Other Direct Costs	
Materials Supplies	$2,500
Publication Costs	$0
Consultant Services	$0
Computer Services	$0
Subawards	$0
Other	$32,585
Total Other Direct Costs (G)	$35,085
H. Total Direct Costs (A Through G)	**$379,977**
I. Indirect Costs*	**$224,319**
J. Total Direct and Indirect Costs (H + I)	$604,296
K. Fees	$0
L. Total Amount of Request (J) OR (J + K)	**$604,296**
M. Cost Sharing Proposed Level	$0

*Indirect Cost Rates

Item Name	Indirect Cost Rate
MTDC	69.0000%

These rates are at the time of award and are based upon the budget submitted to the NSF. It does not include any out-year adjustments. The NSF will not modify awards simply to correct indirect cost rates cited in the award notice. See the Proposal & Award Policies & Procedures Guide (PAPPG) Chapter X.A.3.a. for guidance on re-budgeting authority.

NATIONAL SCIENCE FOUNDATION

Award Notice

Award Number (FAIN): 2148928
Managing Division Abbreviation: SES **Amendment Number:** 000

AWARDEE INFORMATION

Award Recipient: PRESIDENT AND FELLOWS OF HARVARD COLLEGE
Awardee Address: 1033 MASSACHUSETTS AVE 5th Floor Cambridge, MA 02138-5369
Official Awardee Email Address: [redacted]
Unique Entity Identifier (UEI): LN53LCFJFL45

AMENDMENT INFORMATION

Amendment Type: New Project
Amendment Date: 02/03/2022
Amendment Number: 000
Proposal Number: 2148928
Amendment Description:

The National Science Foundation hereby awards a Standard Grant for support of the project described in the proposal referenced above.

AWARD INFORMATION

Award Number (FAIN): 2148928
Award Instrument: Standard Grant
Award Date: 02/03/2022
Award Period of Performance: Start Date: 06/01/2022 End Date: 05/31/2025
Project Title: Collaborative Research: Understanding the Evolution of Political Campaign Advertisements over the Last Century
Managing Division Abbreviation: SES
Research and Development Award: Yes
Funding Opportunity: PD 19-120Y Accountable Institutions and Behavior
Assistance Listing Number(s) and Name(s): 47.075 Social, Behavioral, and Economic Sciences

FUNDING INFORMATION

Amount Obligated by this Amendment: $155,357

Total Intended Award Amount: $155,357
Total Approved Cost Share or Matching Amount: $0
Total Amount Obligated to Date: $155,357
Expenditure Limitation: Not Applicable

PROJECT PERSONNEL

Principal Investigator: [redacted] **Email:** [redacted]

Organization: PRESIDENT AND FELLOWS OF HARVARD COLLEGE

COLLABORATIVE INFORMATION

Proposal ID	Lead	PI Name	Organization
2147635	Y	[redacted]	University of Oklahoma
2148202	N		University of Iowa
2148928	N		Harvard College, President & Fellows of Harvard University

NSF CONTACT INFORMATION

Managing Grants Official (Primary Contact)
Name: Tyffani N. Smith
Email: tnsmith@nsf.gov

Awarding Official
Name: Willie M. Powell
Email: wpowell@nsf.gov

Managing Program Officer
Name: Jan E. Leighley
Email: jleighle@nsf.gov

GENERAL TERMS AND CONDITIONS

This is awarded pursuant to the authority of the National Science Foundation Act of 1950, as amended (42 U.S.C. 1861-75) and is subject to Research Terms and Conditions (RTCs) dated 11/12/2020, and NSF Agency Specific Requirements, dated 10/04/2021, available at https://www.nsf.gov/awards/managing/rtc.jsp.

This institution is a signatory to the Federal Demonstration Partnership (FDP) Phase VI Agreement which requires active institutional participation in new or ongoing FDP demonstrations and pilots.

BUDGET

A. Senior Personnel	
Senior Personnel Count	3.00
Senior Personnel Calendar Months	1.50
Senior Personnel Academic Months	0.00
Senior Personnel Summer Months	0.00
Senior Personnel Amount	$50,303
B. Other Personnel	
Post Doctoral Scholars	
Post Doctoral Count	0.00
Post Doctoral Calendar Months	0.00
Post Doctoral Academic Months	0.00
Post Doctoral Summer Months	0.00
Post Doctoral Amount	$0
Other Professionals	
Other Professionals Count	0.00
Other Professionals Calendar Months	0.00
Other Professionals Academic Months	0.00
Other Professionals Summer Months	0.00
Other Professionals Amount	$0
Graduate Students	
Graduate Students Count	3.00
Graduate Students Amount	$28,738
Undergraduate Students	
Undergraduate Students Count	0.00
Undergraduate Students Amount	$0
Secretarial - Clerical	
Secretarial - Clerical Count	0.00
Secretarial - Clerical Amount	$0
Other	
Other Count	0.00
Other Amount	$0
Total Salaries and Wages (A+B)	$79,041
C. Fringe Benefits	$12,886
Total Salaries, Wages, Fringe Benefits (A + B + C)	$91,927
D. Equipment	$0
E. Travel	
Domestic	$0

International	$0
F. Participant Support Costs	
Participant Support Costs Stipends	$0
Participant Support Costs Travel	$0
Participant Support Costs Subsistence	$0
Participant Support Costs Other	$0
Total Number of Participants	0.00
Total Participant Costs (F)	$0
G. Other Direct Costs	
Materials Supplies	$0
Publication Costs	$0
Consultant Services	$0
Computer Services	$0
Subawards	$0
Other	$0
Total Other Direct Costs (G)	$0
H. Total Direct Costs (A Through G)	**$91,927**
I. Indirect Costs*	**$63,430**
J. Total Direct and Indirect Costs (H + I)	$155,357
K. Fees	$0
L. Total Amount of Request (J) OR (J + K)	**$155,357**
M. Cost Sharing Proposed Level	$0

*Indirect Cost Rates

Item Name	Indirect Cost Rate
MTDC	69.0000%

These rates are at the time of award and are based upon the budget submitted to the NSF. It does not include any out-year adjustments. The NSF will not modify awards simply to correct indirect cost rates cited in the award notice. See the Proposal & Award Policies & Procedures Guide (PAPPG) Chapter X.A.3.a. for guidance on re-budgeting authority.

NATIONAL SCIENCE FOUNDATION

Award Notice

Award Number (FAIN): 2215050
Managing Division Abbreviation: DRL **Amendment Number:** 000

AWARDEE INFORMATION

Award Recipient: PRESIDENT AND FELLOWS OF HARVARD COLLEGE
Awardee Address: 1033 MASSACHUSETTS AVE 5TH FL CAMBRIDGE, MA 02138-5369
Official Awardee Email Address: [redacted]
Unique Entity Identifier (UEI): LN53LCFJFL45

AMENDMENT INFORMATION

Amendment Type: New Project
Amendment Date: 08/22/2022
Amendment Number: 000
Proposal Number: 2215050
Amendment Description:

The National Science Foundation hereby awards a Standard Grant for support of the project described in the proposal referenced above as modified by revised budget dated 07/08/2022.

As a condition of this AISL award PIs are required to
(1) submit the final summative evaluation of or other knowledge-building product(s) from the project for posting to an AISL-designated repository as part of submission of the Final Report. Final reports will not be approved before the summative evaluation/knowledge-building products are posted for the project; and
(2) work with an NSF third-party evaluator for the purpose of program evaluation when requested to do so.

The Foundation authorizes the awardee to enter into the proposed subaward arrangement. The subaward agreement should contain appropriate provisions in accordance with the award terms and conditions in effect at the time of this award amendment, and contain any special conditions included in this award.

Incentive payments or gifts to participants must be made in accordance with written institutional policies and procedures and supported by auditable documentation. The allowability of these costs will ultimately be based on the awardee institution's ability to adequately demonstrate that the incentives have been disbursed in accordance with its policies and procedures.

Costs of entertainment, amusement, diversion and social activities, and any costs directly associated with such activities (such as meals, lodging, rentals, transportation and gratuities) are unallowable. When certain meals are an integral and necessary part of a conference or meeting (i.e., working meals where business is transacted), grant funds may be used for such meals. Grant funds may also be used to

furnish a reasonable amount of coffee or soft drinks for conference or meeting participants and attendees during coffee breaks.

No NSF funds may be spent on meals or coffee breaks for intramural meetings of an organization or any of its components, including, but not limited to, laboratories, departments and centers.

AWARD INFORMATION

Award Number (FAIN): 2215050
Award Instrument: Standard Grant
Award Date: 08/22/2022
Award Period of Performance: Start Date: 09/01/2022 End Date: 06/30/2024
Project Title: Instrument Development: Racially & Ethnically Minoritized Youths' Varied Out-Of-School-Time Experiences and Their Effects on STEM Attitudes, Identity, and Career Interest
Managing Division Abbreviation: DRL
Research and Development Award: Yes
Funding Opportunity: NSF 21-599 Advancing Informal STEM Learning
Assistance Listing Number(s) and Name(s): 47.076 Education and Human Resources

FUNDING INFORMATION

Amount Obligated by this Amendment: $950,262
Total Intended Award Amount: $950,262
Total Approved Cost Share or Matching Amount: $0
Total Amount Obligated to Date: $950,262
Expenditure Limitation: Not Applicable

PROJECT PERSONNEL

Principal Investigator: [redacted]	**Email:** [redacted]	**Organization:** PRESIDENT AND FELLOWS OF HARVARD COLLEGE
co-Principal Investigator: [redacted]	**Email:** [redacted]	**Organization:** PRESIDENT AND FELLOWS OF HARVARD COLLEGE
co-Principal Investigator: [redacted]	**Email:** [redacted]	**Organization:** SMITHSONIAN INSTITUTION
co-Principal Investigator: [redacted]	**Email:** [redacted]	**Organization:** FLORIDA INTERNATIONAL UNIVERSITY
co-Principal Investigator:	**Email:** [redacted]	**Organization:** FLORIDA

[redacted]

INTERNATIONAL UNIVERSITY

NSF CONTACT INFORMATION

Managing Grants Official
(Primary Contact)
Name: Cartia Brown-Morgan
Email: cbrownmo@nsf.gov

Awarding Official
Name: LeVar R. Farrior
Email: lfarrior@nsf.gov

Managing Program Officer
Name: Julie I Johnson
Email: jjohnson@nsf.gov

GENERAL TERMS AND CONDITIONS

This is awarded pursuant to the authority of the National Science Foundation Act of 1950, as amended (42 U.S.C. 1861-75) and is subject to Research Terms and Conditions (RTCs) dated 11/12/2020, and NSF Agency Specific Requirements, dated 05/13/2022, available at https://www.nsf.gov/awards/managing/rtc.jsp.

This institution is a signatory to the Federal Demonstration Partnership (FDP) Phase VI Agreement which requires active institutional participation in new or ongoing FDP demonstrations and pilots.

This award is made in accordance with the provisions of NSF Solicitation: NSF 21-599 Advancing Informal STEM Learning.

BUDGET

A. Senior Personnel	
Senior Personnel Count	4.00
Senior Personnel Calendar Months	8.43
Senior Personnel Academic Months	0.00
Senior Personnel Summer Months	0.00
Senior Personnel Amount	$128,477
B. Other Personnel	
Post Doctoral Scholars	
Post Doctoral Count	2.00
Post Doctoral Calendar Months	12.00
Post Doctoral Academic Months	0.00
Post Doctoral Summer Months	0.00
Post Doctoral Amount	$70,320
Other Professionals	
Other Professionals Count	5.00
Other Professionals Calendar	8.40

Months	
Other Professionals Academic Months	0.00
Other Professionals Summer Months	0.00
Other Professionals Amount	$52,990
Graduate Students	
Graduate Students Count	0.00
Graduate Students Amount	$0
Undergraduate Students	
Undergraduate Students Count	0.00
Undergraduate Students Amount	$0
Secretarial - Clerical	
Secretarial - Clerical Count	0.00
Secretarial - Clerical Amount	$0
Other	
Other Count	0.00
Other Amount	$0
Total Salaries and Wages (A+B)	$251,787
C. Fringe Benefits	$69,676
Total Salaries, Wages, Fringe Benefits (A + B + C)	$321,463
D. Equipment	$0
E. Travel	
Domestic	$16,719
International	$0
F. Participant Support Costs	
Participant Support Costs Stipends	$0
Participant Support Costs Travel	$0
Participant Support Costs Subsistence	$0
Participant Support Costs Other	$0
Total Number of Participants	0.00
Total Participant Costs (F)	$0
G. Other Direct Costs	
Materials Supplies	$3,200
Publication Costs	$0
Consultant Services	$0
Computer Services	$2,800
Subawards	$285,298
Other	$28,874
Total Other Direct Costs (G)	$320,172
H. Total Direct Costs (A	**$658,354**

Through G)	
I. Indirect Costs*	**$291,908**
J. Total Direct and Indirect Costs (H + I)	$950,262
K. Fees	$0
L. Total Amount of Request (J) OR (J + K)	**$950,262**
M. Cost Sharing Proposed Level	$0

*Indirect Cost Rates

Item Name	Indirect Cost Rate
Modified Total Direct Costs	69.0000%

These rates are at the time of award and are based upon the budget submitted to the NSF. It does not include any out-year adjustments. The NSF will not modify awards simply to correct indirect cost rates cited in the award notice. See the Proposal & Award Policies & Procedures Guide (PAPPG) Chapter X.A.3.a. for guidance on re-budgeting authority.

NATIONAL SCIENCE FOUNDATION

Award Notice

Award Number (FAIN): 2215050

Managing Division Abbreviation: DRL

Amendment Number: 001

RECIPIENT INFORMATION

Recipient (Legal Business Name): PRESIDENT AND FELLOWS OF HARVARD COLLEGE
Recipient Address: 1033 MASSACHUSETTS AVE 5TH FL CAMBRIDGE, MA 02138-5369
Official Recipient Email Address: [redacted]
Unique Entity Identifier (UEI): LN53LCFJFL45

AMENDMENT INFORMATION

Amendment Type: Other Admin No Fund Actions
Amendment Date: 12/09/2022
Amendment Number: 001
Proposal Number: Not Applicable
Amendment Description:

The purpose of this amendment is to authorize the awardee to enter into the proposed subaward agreement in accordance with the Subawarding, Transferring or Contracting Out Part of an NSF Award request submitted on 12/09/2022.

Except as modified by this amendment, the award conditions remain unchanged.

PROJECT PERSONNEL

Principal Investigator: [redacted] **Email:** [redacted] **Organization:** PRESIDENT AND FELLOWS OF HARVARD COLLEGE

co-Principal Investigator: [redacted] **Email:** [redacted] **Organization:** PRESIDENT AND FELLOWS OF HARVARD COLLEGE

co-Principal Investigator: [redacted] **Email:** [redacted] **Organization:** SMITHSONIAN INSTITUTION

co-Principal Investigator: [redacted]	**Email:** [redacted]	**Organization:** FLORIDA INTERNATIONAL UNIVERSITY
co-Principal Investigator: [redacted]	**Email:** [redacted]	**Organization:** FLORIDA INTERNATIONAL UNIVERSITY

NSF CONTACT INFORMATION

Managing Grants Official (Primary Contact) **Name:** Cartia Brown-Morgan **Email:** cbrownmo@nsf.gov **Phone:** (703) 292-8709	**Awarding Official** **Name:** Cartia Brown-Morgan **Email:** cbrownmo@nsf.gov	**Managing Program Officer** **Name:** Julie I Johnson **Email:** jjohnson@nsf.gov **Phone:** (703) 292-8624

NATIONAL SCIENCE FOUNDATION

Award Notice

Award Number (FAIN): 2306216
Managing Division Abbreviation: DMR **Amendment Number:** 000

RECIPIENT INFORMATION

Recipient (Legal Business Name): PRESIDENT AND FELLOWS OF HARVARD COLLEGE
Recipient Address: 1033 MASSACHUSETTS AVE 5TH FL CAMBRIDGE, MA 02138-5369
Official Recipient Email Address: [redacted]
Unique Entity Identifier (UEI): LN53LCFJFL45

AMENDMENT INFORMATION

Amendment Type: New Project
Amendment Date: 07/24/2023
Amendment Number: 000
Proposal Number: 2306216
Amendment Description:

The National Science Foundation hereby awards a Standard Grant for support of the project described in the proposal referenced above as modified by revised budget dated 06/20/2023.

The "Administration of NSF Conference or Group Travel Award Grant Conditions (FL 26)" in effect the date of this amendment are applicable. The FL 26 special award conditions can be found at: https://www.nsf.gov/awards/managing/special_conditions.jsp.

Funds provided for participant support may not be diverted by the awardee to other categories of expense without the prior written approval of the cognizant NSF Program Officer. Since participant support cost is not a normal account classification, the awardee organization must be able to separately identify participant support costs. It is highly recommended that separate accounts, sub-accounts, sub-task, or sub-ledgers be established to accumulate these costs. The awardee should have written policies and procedures to segregate participant support costs.

Costs of entertainment, amusement, diversion and social activities, and any costs directly associated with such activities (such as meals, lodging, rentals, transportation and gratuities) are unallowable. When certain meals are an integral and necessary part of a conference or meeting (i.e., working meals where business is transacted), grant funds may be used for such meals. Grant funds may also be used to furnish a reasonable amount of coffee or soft drinks for conference or meeting participants and attendees during coffee breaks.

No NSF funds may be spent on meals or coffee breaks for intramural meetings of an organization or any of its components, including, but not limited to, laboratories, departments and centers.

AWARD INFORMATION

Award Number (FAIN): 2306216
Award Instrument: Standard Grant
Award Date: 07/24/2023
Award Period of Performance: Start Date: 08/01/2023 End Date: 07/31/2026
Project Title: Quantum Noir: A conference series focused on Faculty, Researchers, and Students of Color(+) in the Quantum Sciences
Managing Division Abbreviation: DMR
Research and Development Award: Yes
Funding Opportunity: NSF 22-1 Proposal & Award Policies & Procedures Guide - PAPPG
Assistance Listing Number(s) and Name(s): 47.049 Mathematical and Physical Sciences (Predominant source of funding for SEFA reporting)

FUNDING INFORMATION

Amount Obligated by this Amendment: $291,459
Total Intended Award Amount: $291,459
Total Approved Cost Share or Matching Amount: $0
Total Amount Obligated to Date: $291,459
Expenditure Limitation: Not Applicable

PROJECT PERSONNEL

Principal Investigator: [redacted] **Email:** [redacted] **Organization:** PRESIDENT AND FELLOWS OF HARVARD COLLEGE

NSF CONTACT INFORMATION

Managing Grants Official
(Primary Contact)
Name: Elizabeth Gebremedhin
Email: egebreme@nsf.gov
Phone: (703) 292-4444

Awarding Official
Name: Elizabeth Gebremedhin
Email: egebreme@nsf.gov

Managing Program Officer
Name: Tomasz Durakiewicz
Email: tdurakie@nsf.gov
Phone: (703) 292-4892

GENERAL TERMS AND CONDITIONS

This is awarded pursuant to the authority of the National Science Foundation Act of 1950, as amended (42 U.S.C. 1861-75) and is subject to Research Terms and Conditions (RTCs) dated 11/12/2020, and NSF Agency Specific Requirements, dated 01/30/2023, available at https://www.nsf.gov/awards/managing/rtc.jsp.

This institution is a signatory to the Federal Demonstration Partnership (FDP) Phase VI Agreement

which requires active institutional participation in new or ongoing FDP demonstrations and pilots.

BUDGET

A. Senior Personnel	
Senior Personnel Count	0.00
Senior Personnel Calendar Months	0.00
Senior Personnel Academic Months	0.00
Senior Personnel Summer Months	0.00
Senior Personnel Amount	$0
B. Other Personnel	
Post Doctoral Scholars	
Post Doctoral Count	0.00
Post Doctoral Calendar Months	0.00
Post Doctoral Academic Months	0.00
Post Doctoral Summer Months	0.00
Post Doctoral Amount	$0
Other Professionals	
Other Professionals Count	0.00
Other Professionals Calendar Months	0.00
Other Professionals Academic Months	0.00
Other Professionals Summer Months	0.00
Other Professionals Amount	$0
Graduate Students	
Graduate Students Count	0.00
Graduate Students Amount	$0
Undergraduate Students	
Undergraduate Students Count	0.00
Undergraduate Students Amount	$0
Secretarial - Clerical	
Secretarial - Clerical Count	0.00
Secretarial - Clerical Amount	$0
Other	
Other Count	3.00

Other Amount	$10,000
Total Salaries and Wages (A+B)	$10,000
C. Fringe Benefits	$980
Total Salaries, Wages, Fringe Benefits (A + B + C)	$10,980
D. Equipment	$0
E. Travel	
Domestic	$10,000
International	$0
F. Participant Support Costs	
Participant Support Costs Stipends	$0
Participant Support Costs Travel	$101,500
Participant Support Costs Subsistence	$115,172
Participant Support Costs Other	$0
Total Number of Participants	200.00
Total Participant Costs (F)	$216,672
G. Other Direct Costs	
Materials Supplies	$0
Publication Costs	$0
Consultant Services	$0
Computer Services	$0
Subawards	$0
Other	$34,831
Total Other Direct Costs (G)	$34,831
H. Total Direct Costs (A Through G)	**$272,483**
I. Indirect Costs*	**$18,976**
J. Total Direct and Indirect Costs (H + I)	$291,459
K. Fees	$0
L. Total Amount of Request (J) OR (J + K)	**$291,459**
M. Cost Sharing Proposed Level	$0

*Indirect Cost Rates

Item Name	Indirect Cost Rate
MTDC	34.0000%

These rates are at the time of award and are based upon the budget submitted to the NSF. It does not include any out-year adjustments. The NSF will not modify awards simply to correct indirect cost

rates cited in the award notice. See the Proposal & Award Policies & Procedures Guide (PAPPG) Chapter X.A.3.a. for guidance on re-budgeting authority.

NATIONAL SCIENCE FOUNDATION

Award Notice

Award Number (FAIN): 2306216

Managing Division Abbreviation: DMR

Amendment Number: 001

RECIPIENT INFORMATION

Recipient (Legal Business Name): PRESIDENT AND FELLOWS OF HARVARD COLLEGE
Recipient Address: 1033 MASSACHUSETTS AVE STE 3 CAMBRIDGE, MA 02138-5366
Official Recipient Email Address: [redacted]
Unique Entity Identifier (UEI): LN53LCFJFL45

AMENDMENT INFORMATION

Amendment Type: Other Admin No Fund Actions
Amendment Date: 05/01/2025
Amendment Number: 001
Proposal Number: Not Applicable
Amendment Description:

The purpose of this amendment is to:

- Change the award end date from 07/31/2026 to 04/25/2025.
- This action is in accordance with the award termination notice dated 04/25/2025.

Except as modified by this amendment, the award conditions remain unchanged.

PROJECT PERSONNEL

Principal Investigator: [redacted] **Email:** [redacted]

Organization: PRESIDENT AND FELLOWS OF HARVARD COLLEGE

NSF CONTACT INFORMATION

Managing Grants Official
(Primary Contact)
Name: Elizabeth Gebremedhin
Email: egebreme@nsf.gov
Phone: (703) 292-4444

Awarding Official
Name: Elizabeth Gebremedhin
Email: egebreme@nsf.gov

Managing Program Officer
Name: Tomasz Durakiewicz
Email: tdurakie@nsf.gov
Phone: (703) 292-4892

May 12, 2025, Terminations

U.S. National Science Foundation
Division of Grants and Agreements
2415 Eisenhower Avenue
Alexandria, Virginia 22314

May 12, 2025

Dr. Alan Garber
Office of the President
Harvard University
Massachusetts Hall
Cambridge, MA 02138

Ref: Notice of Termination

Dr. Garber:

The U.S. National Science Foundation (NSF) has undertaken a review of its award portfolio. The agency has determined that termination of certain awards is necessary because they are not in alignment with current NSF priorities and/or programmatic goals. NSF understands that Harvard continues to engage in race discrimination including in its admissions process, and in other areas of student life, as well as failing to promote a research environment free of antisemitism and bias.

Effective immediately, the attached awards are terminated.

NSF is issuing this termination to protect the interests of the government pursuant to NSF Grant General Conditions (GC-1) term and condition entitled 'Termination and Enforcement,' on the basis that they no longer effectuate the program goals or agency priorities. This is the final agency decision and not subject to appeal.

Costs incurred as a result of this termination may be reimbursed, provided such costs would otherwise be allowable under the terms of the award and the governing cost principles. In accordance with your award terms and conditions, you have 30 days from the termination date to furnish an itemized accounting of allowable costs incurred prior to the termination date.

Sincerely,

[redacted]

Jamie H. French, Division Director
Office of Budget Finance and Award Management (BFA)
Division of Grants and Agreements (DGA)

Award ID	Award Title
1231319	Center for Integrated Quantum Materials
1839870	FW-HTF: Collaborative Research: The Next Mobile Office: Safe and Productive Work in Automated Vehicles
1841403	Phase II I/UCRC Harvard: Center for Spatiotemporal Thinking, Computing and Applications (STCA)
1856215	Belmont Forum Collaborative Research: Governance of Sociotechnical Transformations
1907398	Collaborative Research: Developing an Online Game to Teach Middle School Students Science Research Practices in the Life Sciences
1914916	The Evolution of Evolvability in Microbial Populations
1919073	Collaborative research: Emirical Evidence of the Tax Administration Production Function
1942438	CAREER: The Tuning and Topography of the Ventral Visual Stream
1943902	CAREER: Learning Probabilistic Factor Models
2002771	Topology, Geometry and Physics
2005475	Geometric Langlands Correspondence: Further Directions
2012023	Physics and Applications of Quantum Nanophotonics Systems
2013874	Spindle Self-Organization and Bioenergetics in Vivo
2023528	Foundations of Data Science Institute
2025158	NNCI: Center for Nanoscale Systems (CNS)
2038059	2020 Waterman Award
2040378	Hodge Filtration, Singularities, and Complex Birational Geometry
2045981	CAREER: Beyond Conditional Independence: New Model-Free Targets for High-Dimensional Inference
2047192	CAREER: Ecological turnover at the dawn of the Great Ordovician Biodiversification Event - quantifying the Cambro-Ordovician transition through the lens of exceptional preservation
2101884	Digitization TCN: Collaborative Research: Bringing Asia to digital life: mobilizing underrepresented Asian herbarium collections in the US to propel biodiversity discovery
2104150	Collaborative Research: LightningBug, An Integrated Pipeline to Overcome The Biodiversity Digitization Gap
2105048	Transport on van der Wals Superconductor Heretostructures
2105903	Collaborative Research: MRA: Modeling and forecasting phenology across spatiotemporal and taxonomic scales using ecological observatory and mobilized digital herbarium data
2107078	CNS Core: Medium: Approximation and Randomization in the Programmable Data Plane
2107391	HCC: Medium: Improving Human-AI Collaboration on Decision-Making Tasks
2116679	Institute for Theoretical, Atomic, Molecular and Optical Physics (ITAMP)
2116702	Collaborative Research: How Events are Conceptualized by Users of Homesign and by Users of an Established Sign Language
2119351	Collaborative Research: DMREF: Design of Superionic Conductors by Tuning Lattice Dynamics
2121239	Collaborative Research: HNDS-I: A global seafood trade network database for sustainable food systems, human health, and nutrition security
2123965	Collaborative Research: FMitF: Track I: Usable Synthesis-based End-User Programming with Rich Interaction Modalities
2127882	Collaborative Research: MFB: Deciphering the Logic of PTM Crosstalk via Novel Chemical Technology: Histones and Beyond
2129576	Explaining the Surprising Simplicity of Continental Evapotranspiration
2129580	Revitalizing a field wireless network for research, education and outreach at the Harvard Forest
2137723	QuIC-TAQS: Integrated Lithium Niobate Quantum Photonics Platform
2140043	2021 Waterman Award
2140743	Graduate Research Fellowship Program (GRFP)
2141382	Collaborative Research: Coupled flow-geomechanical models applied to assess earthquake triggering in tectonically active regions – The Los Angeles basin, CA
2143077	CAREER: Defining how the primate visual system works under naturalistic conditions
2143177	CAREER: Observing topological magnetoelectric effects by magneto-optics and quantum transport
2143343	CAREER: The AI Revolution and Autocratic Institutions
2145925	CAREER: Linking systemic stem cell activation to vertebrate limb regeneration
2147694	Collaborative Research: SaTC: CORE: Medium: Foundations of Trust-Centered Multi-Agent Distributed Coordination
2150290	REU Site: Summer Program at Harvard in Earth and Environmental Research (SPHEER): Investigating a changing planet across multiple timescales
2150813	Collaborative Research: Reconstructing Classic Genetic and Social Kinship Networks
2151294	Remote homology detection with evolutionary profile HMMs
2152149	FRG: Collaborative Research: Definability and Computability over Arithmetically Significant Fields
2152991	Interactions of Combinatorics and Physics
2153335	Random Matrices, Random Schrödinger Operators, and Applications
2154245	Collaborative Research: PurSUiT: Understanding the Neotropical Velvet Worms (Onychophora, Peripatidae, Neopatida), a Cretaceous Radiation of Terrestrial Panarthropods
2200449	Shimura Varieties and Abelian Varieties
2200981	Unlikely Intersections in Diophantine Geometry and Dynamics
2202113	AGS-FIRP Track 3: Methane Emissions Quantification at Scales from 20m to 200km Using the MethaneAIR Imaging Spectrometer on the NSF Gulfstream-V (MAIR-E)
2202698	Collaborative Research: P2C2--Constraints on Last Interglacial and Late Holocene Global Mean Sea Level and Fingerprinting Polar Ice Mass Flux from Broadly Distributed Coastal Caves
2202772	High Spatial Resolution Assessment of the Speleothem Magnetization Proxy
2202984	Partially Wrapped Fukaya Categories and Functoriality in Mirror Symmetry
2203621	Quantum Charge Tunneling through Self-Assembled Monolayers (SAMs)

Award ID	Award Title
2206110	WoU-MMA: The Electromagnetic Counterparts of Gravitational Wave Sources
2207119	Controls on ground surface deformation in thrust and reverse fault earthquakes
2207659	Topics In General Relativity
2207972	NSF BSF: Nonlinear Photon Interactions in Cooperative Quantum Optical Systems
2209623	Collaborative Research: Elements: Enriching Scholarly Communication with Augmented Reality
2210173	Collaborative Research: Impacts of Global Change on Terrestrial Mercury in the Arctic
2210757	Using Hothouse Climates to Generalize Understanding of Convection, Clouds, and Circulation
2211383	Collaborative Research: CNS Core: Medium: A Stateful Switch Architecture for In-Network Compute
2216066	MRI: Acquisition of Single-Crystal Diffractometer for Small Molecule Crystallography and Cryosystem
2217680	Collaborative Research: DASS: Co-design of law and computer science for privacy in sociotechnical software systems
2217722	Collaborative Research: DASS: Enabling Standards- and Disclosure-Based Regulations in and through Software Systems: Making Algorithmic Work Management Software Accountable to Law
2218427	Identifying novel memory traces that improve action precision
2218460	Collaborative Research: The Lake Superior Basin: Natural Geomorphic Experiment, Deepwater-Terminating Ice Stream, and Isostatically Adjusting Rift
2218803	HNDS-I: Bringing Differential Privacy to Social Science Data Repositories
2219069	NSFGEO-NERC: Collaborative Research: The first actinopterygian 'adaptive radiation': integrating fossils, function and phylogeny to illuminate innovation in a post-extinction world
2220446	Collaborative Research: Imaging the Beginning of Time from the South Pole: Completing the BICEP Array Survey
2220703	Topological order and Anyons in and out of Equilibrium
2220747	EDGE FGT: MUSH-IT: MUlti-Species Hemimetabolous Insect Tools
2221715	Mid-infrared reconfigurable pulse generators
2223880	Collaborative Research: Digitization and Enrichment of U.S. Herbarium Data from Tropical Africa to Enable Urgent Quantitative Conservation Assessments
2227964	Collaborative Research: Higher-order processing in a peripheral neural structure of a nudibranch mollusc
2228359	Collaborative Research: Development and Applications of GEOS-Chem Atmospheric Chemistry in CESM and MUSICA
2231707	Collaborative Research: CIF: Small: Approximate Coded Computing - Fundamental Limits of Precision, Fault-tolerance and Privacy
2234308	Evolved changes to neural systems for reactive aggression in humans and other primates
2238071	CAREER: Integrating brain-behavior evolution with real-world science impacts through neuroscience of working dogs
2238113	CAREER: Manipulating Barocaloric Effects in Two-Dimensional Perovskites
2238714	Career: Towards a Systematic Characterization of Model Explanations for High-Stakes Decision Making
2238836	CAREER: Complexity of quantum many-body systems: learnability, approximations, and entanglement
2239234	CAREER: Statistical Inference in High Dimensions using Variational Approximations
2239242	CAREER: Using Tracer Interrelationships to Understand Large-Scale Geophysical Flows and their Changes
2239780	CAREER: Developing Neural Network Theory for Uncovering How the Brain Learns
2239795	CAREER: Towards Particle Physics Discoveries With Double Cascades In IceCube and Beyond
2241885	Collaborative Research: State Health, Institutions, and Politics Survey (SHIPS)
2243704	Collaborative Research: Ideas Lab: Discovery of Novel Functional RNA Classes by Computational Integration of Massively-Parallel RBP Binding and Structure Data
2243724	Photoactivation of Stable Bonds for Chemical Conversions
2245246	Strange metals and the phases of quantum materials
2246518	Positive Vector Bundles in Combinatorics
2246630	Bifurcations in Complex Algebraic Dynamics
2246746	Classification and invariants for Borel equivalence relations
2247494	Screening for Generality in Asymmetric Catalysis
2247817	CAS: Collaborative Research: Electronic Structure/Function Relationships Underpinning Atom Transfer Reactivity
2301180	Cognitive Mechanisms of Guided Instruction in the Early Elementary Years
2301246	Collaborative Research: Promoting Math Skills through Playful Communication in the Home Environment
2303486	Warm Pliocene mid-latitude upwelling sites, with implications to future southwestern North America aridity under climate change
2303681	POSE: Phase II: Building the Differential Privacy Ecosystem through OpenDP
2303835	Collaborative Research: Feedbacks among Ecosystem Engineers and their Influence on Ecosystem Functioning
2303983	SHF:Small: Extensible Models and Proofs via Family Polymorphism
2304877	Instanton homology in low-dimensional topology
2305257	Fukaya categories of complex symplectic manifolds
2305373	Applications of homotopy theory to algebraic geometry and physics
2306149	Speech and Communicative Timing Across Languages and Linguistic Contexts
2308043	The Tierras Observatory: An Ultra-precise Time-series Photometer to Characterize Nearby Low-mass Stars and Their Terrestrial Exoplanets
2308272	Postdoctoral Fellowship: OCE-PRF: Reconstructing CO2 Levels for the Late Cretaceous through Paleocene using Sedimentary Compositions of Molecular and Isotopic Proxies
2309041	CRCNS Research Proposal: Learning by Looking: Modeling visual system representation formation via foveated sensing in a 3-D world
2310050	Collaborative Research: Beyond Standard Model Searches Using the IceCube Neutrino Telescope
2310717	New and Refurbished Directions Beyond the Standard Model

Award ID	Award Title
2310908	Belmont Forum Collaborative Research: Climate-Induced Migration in Africa and Beyond: Big Data and Predictive Analytics
2312667	Collaborative Research: CIF: Medium: Fundamental Limits of Privacy-Enhancing Technologies
2313084	Collaborative Research: FET: Medium: Efficient Compilation for Dynamically Reconfigurable Atom Arrays
2315488	Outsourcing Property Tax Re-Assessments: Empirical Evaluation
2315533	Collaborative Research: The Economics of Port Infrastructure
2320265	Equipment: MRI: Track #1 Acquisition of Photonic Wirebonding Tool for Quantum and Nanophotonics
2321651	Collaborative Research: Ideas Lab: Smarter Microbial Observatories for Realtime ExperimentS (SMORES)
2323102	Constructing a 1.5-million-year time series of magmatic and hydrothermal activity at the Juan de Fuca ridge
2323970	Collaborative Research: DMREF: Discovery of unconventional superconductors by design
2324862	Collaborative Research: DESC: Type 2: Delphi: Life-time aware design frameworks for sustainable edge devices
2326605	Collaborative Research: National Science Foundation Expeditions in Computing: Carbon Connect -- An Ecosystem for Sustainable Computing
2326787	QuSeC-TAQS: Quantum Sensor Networks for Metrology, Chemistry and Astrophysics
2327447	When Teachers "Aren't There": Detecting, Evaluating, and Learning from Rote Teaching Across Development
2331228	EAGER: Identifying the genetic determinants of plasmid-dependent phage host range
2331831	SLES: A Theoretical Lens on Generative AI Safety: Near and Long Term
2332539	EAGER: Coherent Manipulation and Quantum Entanglement in Ultracold Reactions
2332668	Collaborative Research: SWIFT-SAT: Coexistence of Remote Astronomical Instruments Susceptible to Interference with Large Communication Satellite Constellations
2333014	Rehousing and Digitization of the Museum of Comparative Zoology Recent Invertebrate Microscope Slide Collections
2333466	EAGER: Collaborative K-12 Outreach at the Interface between Biology and Imaging Science
2333888	Collaborative Research: NSF-BSF: Under Pressure: The evolution of guard cell turgor and the rise of the angiosperms
2333904	EAGER: Researching Team-Based Learning in High-School Physics Classes
2334882	Collaborative Research: Artificially-Evolved Modular Robotic Swimmers for Enhanced Mobility in Challenging Hydrodynamic Environments
2334984	DESIGN: Culture Change - Building a Relational and Inclusive Discipline through Genetics Engagement (CC-BRIDGE)
2336044	CAREER: Habitability of the Hadean Earth - A South African perspective
2337516	Doctoral Dissertation Research: Investigating the genomic underpinnings of the human hand and foot
2338206	CAREER: CAS: Organic Photochemistry for Light-Driven CO2 Capture and Release
2338760	CAREER: Statistical Inference in Observational Studies -- Theory, Methods, and Beyond
2339524	CAREER: Geometric Deep Learning to Facilitate Algorithmic and Scientific Advances in Therapeutics
2339621	CAREER: Microbial Mediation of Temperate Tree Responses to Climate Change
2339913	CAREER: Epitaxial stabilization of non-perovskite oxide quantum materials
2341785	Pluralism in Biological Models of Sex
2342821	Conference: Emerging Statistical and Quantitative Issues in Genomic Research in Health Sciences
2343233	Collaborative Research: Time-dependent imaging of earthquake cycle behavior across the Japan fault system
2343922	NSF-BSF: Mechanism Design for All
2345627	Collaborative Research: Revealing the vast diversity within the legume-rhizobia mutualism
2346137	POSE: Phase I: Open Source Soft Robotics (OSSR): An Open-Source Ecosystem to Increase Access and Enable Discovery of Soft Robotic Technologies
2346173	NSF POSE: Phase II: MLCommons Research for Science: Enabling Open-Source Ecosystems for Scientific Foundation Models by Community Standards and Benchmarks
2347423	Collaborative Research: CDS&E: Generalizable RANS Turbulence Models through Scientific Multi-Agent Reinforcement Learning
2348924	REU Site: Summer Research Program in Ecology at Harvard Forest
2401057	Mechanisms for the establishment of polarity during whole-body regeneration
2401390	Collaborative Research: Stochastic Nonlinear Control and Learning via Spectral Dynamics Embedding
2401498	Birational Geometry, Hodge Theory and Singularities
2401907	Collaborative Research: Climbing and Object Grasping Through Tunable Capillary Adhesion in an Insect-Scale Robot
2402464	Collaborative Research: PYRITE OXIDATION AND THE ENSUING TRIPLE O ISOTOPE COMPOSITION OF SULFATE
2406110	CDS&E: Enabling Population Studies of Supernovae in the Era of Vera Rubin via Simulated-based Inference
2406905	Towards Geometry-Informed Machine Learning: A Comprehensive Framework for Recognizing and Leveraging Heterogeneous Geometric Structure in Data
2407215	SMA-SPEC: A Legacy Spectral Line Survey of Protoplanetary Disks
2407727	NSF-SNSF: Lithium niobate based terahertz systems: fundamentals and applications.
2407922	Collaborative Research: New Windows on the Dynamic Universe with the Vera C. Rubin Observatory, the InterPlanetary Network, and the International Gravitational Wave Network
2408960	Conference: A Celebration of Algebraic Combinatorics
2409404	Quantum Simulation and Collisions with Ultracold Triatomic Molecules
2409713	Quantum Simulation with a Floquet Engineered Array of Interacting Molecules
2412346	Conference: Amplituhedra, Cluster Algebras and Positive Geometry
2412783	RNA Self-Repair Induced by Sunlight: Can a Novel Mechanism Shed Light on Life's Origins and RNA Cell Function?
2416022	Doctoral Dissertation Research: Understanding the Long-Term Drivers of Community Reconciliation in Post-Conflict Societies
2417150	Tracking Adaptation and Investigating Learning Outcomes for Reforming Mathematics for Life Sciences

Award ID	Award Title
2417241	SBE-UKRI: Resource Rational Contractualism: A foundation for moral judgment and decision making
2421119	Collaborative Research: EDGE CMT: Shared genetic and cellular mechanisms of vertebrate limb and fin regeneration.
2421461	TRAILBLAZER: Biodegradable Living Materials
2422348	EFRI BEGIN OI:Neuron-Soft Organoid-Computer Interfaces for Long-Term Three-Dimensional Neural Network Computing
2425714	Collaborative Research: CAIG: A Large Foundational Model for Earthquake Understanding
2426105	Understanding within-cell plasmid evolution with synthetic systems
2426145	RAPID: Ongoing Impacts of the Extraordinary Hunga Tonga Volcanic Eruption on the Stratosphere
2426448	CAREER: Developing novel biomarker proxies to constrain Neogene changes in African woody cover and paleoecological contexts of hominin evolution
2427124	CAREER: Untangling Inter-Area Communication in the Brain Using Multi-Region Neural Networks
2427291	Collaborative Research: Bridging the scale gap between local and regional methane and carbon dioxide isotopic fluxes in the Arctic
2427533	ReDDDoT Phase 1: Planning Grant: Piloting an impact accelerator model for cultivating equity and ethics in genetics innovation
2430375	FET: Small: A complexity theoretic lens on near- and medium-term quantum devices
2432024	Conference: Advances in probability theory and interacting particle systems
2434664	Collaborative Research: AIMING: AI Tools to Knowledge Discovery and Rigorous Reasoning in Polyhedral Geometry
2434879	NSF-SNSF: AN INTEGRATIVE STRUCTURAL AND FUNCTIONAL STUDY TO DISSECT THE REGULATORY MECHANISMS OF CILIARY MOTILITY
2437125	Collaborative Research: Termite Methane Emissions Across Tropical Savannas and Forests
2437498	Collaborative Research: Tracing the Rise of Equine Dairying
2439922	EAGER: Active Metamaterials for Computing Applications
2440824	CAREER: High-Dimensional Learning and Inference from Heterogeneous Data Sources
2441781	CAREER: Interacting Topological Bands in Moire Superlattices and Beyond
2443033	CAREER: CO2-Efficient Computing: Quantifying Trade-Offs in Power, Performance, Area, and Total Carbon Footprint of Monolithic Three-Dimensional Integrated Circuits
2451960	Travel Grant: Reinforcement Learning: from Theorem to Real-World
2502675	Conference: The Legacy of John Tate, and Beyond
2505370	Doctoral Dissertation Research: Multi-sited Geophysical Archaeology for the Study of Rural Settlement Change and Continuity
2514823	NSF-SNSF: Chemical Computing Architectures (CheCoA)

National Science Foundation
2415 Eisenhower Avenue
Alexandria, VA 22314
www.nsf.gov

COOPERATIVE AGREEMENT (CA)

AWARD: DMR-1231319

EFFECTIVE DATE: October 1, 2013

EXPIRATION DATE: September 30, 2018

PROJECTED TOTAL AWARD FUNDING:

(Subject to availability of funds)
$19,971,962

CUMULATIVE AMOUNT:

$36,014,682

SOLICITATION:

(Incorporated by reference, as amended)

NSF 11-522

Science and Technology Centers: Integrative Partnerships

CFDA NUMBER:
47.049

OTHER AWARDS UNDER THIS PROGRAM:

Show List of Awards

AWARDEE: Harvard College, President & Fellows of Harvard University

PROJECT TITLE: Center for Integrated Quantum Materials

PROJECT ABSTRACT: https://www.fastlane.nsf.gov/servlet/showaward?award=1231319

Principal Investigator(s)	Proposal No.	Institution (s)
[redacted]	DMR-1231319	Harvard College, President & Fellows of Harvard University
		Howard University
		Massachusetts Institute of Technology
		Museum of Science

NSF Contact Information:

Financial/Administrative questions: e-mail your NSF Grants and Agreements Official, Elizabeth Gebremedhin, at egebreme@nsf.gov or call the Division at 703-292-4444 .

Programmatic questions: e-mail your NSF Program Officer, Tomasz Durakiewicz, at tdurakie@nsf.gov or call the Program Division at 703-292-4892 .

This CA is entered into between the United States of America, represented by the National Science Foundation (NSF), and the above named Awardee pursuant to the authority of the National Science Foundation Act of 1950, as amended (42 USC 1861-1875). This CA is provided electronically to the Awardee. The Awardee is responsible for full compliance with all Programmatic and Financial/Administrative Terms and Conditions as initially stated or as updated over the life of this CA. The Awardee's request to draw down funds under this CA will represent acceptance by the Awardee of all Terms and Conditions of the CA. The Authorized Organizational Representative (AOR) will be electronically notified of any changes to these Terms and Conditions and is encouraged to immediately review these changes and contact the Grants and Agreements Official or Program Officer within thirty days with any questions.

Financial/Administrative Terms and Conditions (FATC):

1) General FATC:
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=NSF99999FATC004

2) Award Specific FATC:

A. In accordance with sections 1869a and 1869b of title 42 of the United States Code, the awardee will do the following if the project involves K-12 students or teachers:

1. Obtain from the school board or comparable authority responsible for the schools considering participation in the project, written approval prior to involvement of pre-college students in pre-college education research and development, pilot-testing, evaluation, and revision of experimental and innovative pre-college curriculum.

2. Include in every publication, testing, or distribution agreement involving instructional materials developed under this grant (including, but not limited to, teachers' manuals, textbooks, films, tapes, or other supplementary material) a requirement that such material be made available within the school district using it for inspection by parents or guardians of children engaged in educational programs or projects using such material of that school district.

B. Funds provided for participant support may not be diverted by the awardee to other categories of expense without the prior written approval of the cognizant NSF Program Officer. Since participant support cost is not a normal account classification, the awardee organization must be able to separately identify participant support costs. It is highly recommended that separate accounts, sub-accounts, sub-task, or sub-ledgers be established to accumulate these costs. The awardee should have written policies and procedures to segregate participant support costs.

C. Costs of entertainment, amusement, diversion and social activities, and any costs directly associated with such costs (such as meals, lodging, rentals, transportation and gratuities) are unallowable. When certain meals are an integral and necessary part of a conference or meeting (i.e., working meals where business is transacted), grant funds may be used for such meals. Grant funds may also be used to furnish a reasonable amount of coffee or soft drinks for conference or meeting participants and attendees during coffee breaks.

D. The exhibit and all other materials produced as part of the project, including electronic components such as World Wide Web pages, must include a clear indication of the source(s) of support (both NSF and any other contributors), and must include the NSF logo, all in a manner to be approved by NSF. NSF funding credit and logo also must be displayed at the beginning of any group presentations on the project, including professional or other meetings.

All promotional material for the project produced under the control of the grantee must include NSF funding credit.

E. Incentive payments or gifts to participants must be made in accordance with written institutional policies and procedures and supported by auditable documentation. The allowability of these costs will ultimately be based on the awardee institution's ability to adequately demonstrate that the incentives have been disbursed in accordance with its policies and procedures.

F. The Foundation authorizes the awardee to enter into the proposed contractual arrangements and to fund such arrangements with award funds up to the amount indicated in the approved budget. Such contractual arrangements should contain appropriate provisions consistent with Articles 8.a.4. and 9 of the NSF Grant General Conditions (GC-1) (dated January 14, 2013) or Articles 5 and 40 of the Research Terms and Conditions (dated June 2011), as well as any special conditions included in this award.

Programmatic Terms and Conditions (PTC):

1) General PTC:
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=NSF11522TPTC000

2) Award Specific PTC:

1. Key Personnel

Except for the Principal Investigator(s) (PIs) or Co-PIs identified in this award, requests to make any changes to personnel, organizations, and/or partners specifically named in the proposal, that have been approved as part of this award, shall be submitted in writing to the cognizant NSF Program Official for approval prior to any changes taking effect. Request for prior approval of changes to the PI(s) must be submitted through FastLane for review by the cognizant NSF Program Official and approval by an NSF Grants Officer.

2. Program Description

The Science and Technology Centers (STC): Integrative Partnerships program supports innovative, potentially transformative, complex research and education projects that require large-scale, long term awards. STCs conduct world-class research through partnerships among academic institutions, national laboratories, industrial organizations, and/or other public/private entities, and via international collaborations, as appropriate. They provide a means to undertake important investigations at the interfaces of disciplines and/or fresh approaches within disciplines. STC investments support the NSF vision of advancing discovery, innovation and education beyond the frontiers of current knowledge, and empowering future generations in science and engineering.

Centers provide a rich environment for encouraging future scientists, engineers and educators to take risks in pursuing discoveries and new knowledge. STCs foster excellence in education by integrating education and research, and by creating bonds between learning and inquiry so that discovery and creativity fully support the learning process.

NSF expects STCs to demonstrate leadership in the involvement of groups traditionally underrepresented in science and engineering at all levels within the Center. To achieve their diversity objectives, STCs are expected to involve individuals from underrepresented groups as members of the Center faculty and as students actively engaged in Center activities STCs are strongly encouraged to form meaningful, substantive and long-term partnerships with minority-serving institution, women's colleges and institutions that primarily serve students with disabilities, thereby providing formal connections with institutions that serve large populations of underrepresented students interested in STEM.

Centers undertake activities that will facilitated knowledge transfer, i.e., the mutual exchange of scientific and technical information among the Center partners and others with the objective of disseminating and utilizing knowledge broadly in multiple sectors.

To date, six competitions have been held to establish NSF Science and Technology Centers. The first two competitions, one in late 1980's and the one in the early 1990's led to establishment of 25 STCs, which are no longer funded as STC centers. A third STC competition was held in 1999 and resulted in five new Centers. A fourth competition resulted in six new Centers in 2002. The centers established in the third and fourth competition have successfully completed ten years and are not anymore funded under the STC program. The fifth competition in FY 2005 added six centers. The most recent competition added five centers in 2010.

Additional information on the STC program is available at the following NSF web page:
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5541.

3. Project Governance

The Awardee will ensure that an efficient and effective STC governing structure is in place throughout the award period to support all critical or significant STC activities. Among the governing components will be the:

* Awardee serving as the Lead Institution,
* STC Director
* STC Management Team, and
* External Advisory Committee (EAC).

4. Governing Responsibilities

The Awardee will ensure efficient and effective management and implementation of all Center responsibilities by the governing components throughout the award period. The Awardee serves as the Lead Institution in the STC and works with the STC Director to ensure the success of the overall program. The Awardee, with support from the STC Director and STC management team, is responsible for planning, operating, and managing the day-to-day activities of the STC, but not limited to the following.

* Managing, staffing, allocating resources, and overseeing general operations of the STC in accordance with the plans submitted to and approved by NSF;
* Assuring that the responsibilities of the STC are met by a management team led by the Center Director and as agreed to by NSF;
* Notifying and gaining approval from NSF for any changes to key personnel or substantive changes in the level of effort of key personnel;
* Holding within ninety (90) days of the effective date of this CA all center members meeting to develop a document that encompasses both Strategic and Implementation plans (referred to as a Strategic and Implementation Plan) and submitting it to NSF in draft form within thirty (30) days of the meeting. Details of the meeting to be coordinated with NSF. The Plan must include statements about the vision, mission, organizational structure, and management and performance goals and indicators of success. It must also include completion timelines, milestones, and deliverables for the initial 60-month award period. The Plan is to be updated annually, building on the accomplishments of the past year and responding to evolving challenges faced by the STC. Goals must include, but need not be limited to:

a) Maintaining the unifying STC intellectual theme as proposed with attention to how the STC's thrust areas are to be integrated with each other and across participating institutions;

b) Integrating STC educational activities into a coherent program with well defined goals, including the relationship of the STC's education and research with other community programs;

c) Integrating the research, education, and knowledge transfer components into a coherent program;

d) Increasing participation of and providing research and educational opportunities to United States citizens, nationals, and lawfully admitted permanent residents, especially women and members of underrepresented groups who are undergraduate and graduate students, postdoctoral researchers, industrial fellows, faculty members from all colleges and universities, and others in the activities of the STC and STC sub awardees; encouraging them to pursue careers in science and engineering; identifying actions that will enhance and ensure ethnic/racial diversity throughout the life of the STC;

e) Maximizing knowledge transfer both at the Lead Institution and among partners, including industry, government, colleges and universities and the public (Knowledge transfer activities involve the mutual exchange of scientific information with the goal of applying the knowledge to the operations or activities of the groups sharing the information and may be accomplished in a variety of ways.);

f) Assuring that a robust and substantive plan is in place for diversity of STC staff and participants at the Lead Institutions and partner sites (Attention must be paid to diversity in filling administrative/management, research, and education positions of the STC at the senior as well as at lower levels.;

g) Assuring effective management of the STC, including mechanisms for integrating individual researchers and institutions into a cohesive STC, focusing STC activities, selecting and integrating related research projects, allocating funds and equipment across all STC activities and among partners, and facilitating the involvement of other scientific and educational groups (When the allocation of funds among the STC's participants involves an internal proposal and review process, the review criteria used by the STC should be consistent with the first two criteria (intellectual merit and broader impact) listed in the STC Program Solicitation (NSF 11-522);

h) Assuring that the disposition of rights to intellectual property created at the STC is consistent with NSF policy. The Intellectual Property Rights Agreement is to be submitted to NSF prior to receipt of an award. This agreement is to also address knowledge transfer and significant intellectual exchanges with other groups.

i) Assuring the implementation of a program of ethics training within the cross-disciplinary and multi-institutional context of the STC for its staff and its subawardee staff, including faculty, visiting faculty, industrial fellows, postdoctoral researchers, and graduate and undergraduate students with training topics to include the nature of the research, methodologies used, ownership of research and ideas, and roles and responsibilities regarding intellectual property; and

j) Assuring continued operation of the STC and its programs in the event of the absence or loss of key personnel and developing thorough procedures for succession and back-up of personnel.

* Establishing an External Advisory Committee (EAC) to provide guidance, advice, and oversight for all of the STC's activities, consistent with its vision, goals, and objectives. The EAC charter must be included in the Strategic and Implementation Plan and any changes to the charter must be communicated to the Lead Program Official for the NSF Program Coordination Team. The EAC membership must, at a minimum:

a) Meet at least annually,

b) Include representation from a wide variety of disciplines (e.g., science, engineering, education) from constituencies served by the STC,,e.g. academic institutions, industry, state and local agencies, national laboratories,
c) Display the diversity of the United States citizenry in its membership, and
d) Not include members with financial, institutional, or collaborative connection(s) to the STC.

* Ensuring the STC Director serves as the liaison between the STC and the National Network of STC Directors and works within the Network to address common goals, problems and opportunities, and facilitate personnel and resource exchanges, support integrated partnerships, and ensure cooperation among Centers toward:
a) Fostering balance among and integration of research, education, and knowledge transfer activities, while avoiding duplication of effort across all STCs;
b) Facilitating interactions to address research, education, and management issues and opportunities, which transcend individual Center capabilities;
c) Serving as the Liaison with private sector, state, local, and national laboratories to identify needs and opportunities and to plan joint implementation strategies, workshops; and
d) Preparing educational materials designed to enhance public understanding of science, engineering, technology, and educational advances that serve society.

* Ensuring all sub-awardee partner institutions function together as an integrated whole, with shared research, education, diversity and knowledge-transfer goals and ensuring excellence in management and expedience in resolution of all issues and concerns among all the sub awardees.

5. Reporting Requirements

The Awardee will provide ad hoc and regular reports as designated by the NSF Lead Program Official and as required by the STC Program. The Awardee will submit all required reports via FastLane using the appropriate reporting category. For any type of report not specifically mentioned in FastLane, the Awardee will use the "Interim Reporting" function to submit reports. The Awardee will ensure that the STC Director meets all reporting requirements with content, format and submission timeline that are agreed by NSF and the STC Director.

Reporting requirements are posted on the NSF STC Program Website at http://www.nsf.gov/od/oia/programs/stc/reports/2009revised_reportingrequirements.pdf . The annual report must be submitted 90 days prior to the end of the current budget period.

6. NSF Ongoing Management and Oversight

The Awardee will ensure full commitment and cooperation among the governing structure components, and all project staff during all ongoing NSF project management and oversight activities. The Awardee will ensure availability of all key partners during any desk or on-site review as well as timely access to all project documentation. Furthermore, the STC Director and key personnel will participate actively in cross-Center meetings, appropriate workshops organized by NSF, and annual meetings of the National Network of STC Directors.

Change History

Prior Expiration Dates:
Per Original Award on
09/17/2013: September 30, 2018

Prior Awarded Funding Amount:
Per Original Award on
09/17/2013: $3,832,809

National Science Foundation
2415 Eisenhower Avenue
Alexandria, VA 22314
www.nsf.gov

COOPERATIVE AGREEMENT (CA)

AWARD: DMR-1231319

EFFECTIVE DATE: October 1, 2013

EXPIRATION DATE: March 31, 2026

PROJECTED TOTAL AWARD FUNDING:

(Subject to availability of funds)
$19,971,962

CUMULATIVE AMOUNT:

$44,434,393

SOLICITATION:

(Incorporated by reference, as amended)

NSF 11-522

Science and Technology Centers: Integrative Partnerships

CFDA NUMBER:
47.049

OTHER AWARDS UNDER THIS PROGRAM:

Show List of Awards

AWARDEE: Harvard College, President & Fellows of Harvard University

PROJECT TITLE: Center for Integrated Quantum Materials

PROJECT ABSTRACT: https://www.fastlane.nsf.gov/servlet/showaward?award=1231319

Principal Investigator(s)	Proposal No.	Institution (s)
[redacted]	DMR-1231319	Harvard College, President & Fellows of Harvard University
		Massachusetts Institute of Technology
		Museum of Science
		Howard University

NSF Contact Information:

Financial/Administrative questions: e-mail your NSF Grants and Agreements Official, Elizabeth Gebremedhin, at egebreme@nsf.gov or call the Division at 703-292-4444.

Programmatic questions: e-mail your NSF Program Officer, Tomasz Durakiewicz, at tdurakie@nsf.gov or call the Program Division at 703-292-4892.

This CA is entered into between the United States of America, represented by the National Science Foundation (NSF), and the above named Awardee pursuant to the authority of the National Science Foundation Act of 1950, as amended (42 USC 1861-1875). This CA is provided electronically to the Awardee. The Awardee is responsible for full compliance with all Programmatic and Financial/Administrative Terms and Conditions as initially stated or as updated over the life of this CA. The Awardee's request to draw down funds under this CA will represent acceptance by the Awardee of all Terms and Conditions of the CA. The Authorized Organizational Representative (AOR) will be electronically notified of any changes to these Terms and Conditions and is encouraged to immediately review these changes and contact the Grants and Agreements Official or Program Officer within thirty days with any questions.

Financial/Administrative Terms and Conditions (FATC):

1) General FATC:
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=NSF99999FATC004

2) Award Specific FATC:

Amendment #023 - Update to CA issued July 25, 2022:

This amendment is to release the final year of incremental funding in the amount of $3,734, 931, of the second five year continuation of this award.

Programmatic Terms and Conditions (PTC):

1) General PTC:
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=NSF11522TPTC000

2) Award Specific PTC:

1. Key Personnel

Except for the Principal Investigator(s) (PIs) or Co-PIs identified in this award, requests to make any changes to personnel, organizations, and/or partners specifically named in the proposal, that have been approved as part of this award, shall be submitted in writing to the cognizant NSF Program Official for approval prior to any changes taking effect. Request for prior approval of changes to the PI(s) must be submitted through FastLane for review by the cognizant NSF Program Official and approval by an NSF Grants Officer.

2. Program Description

The Science and Technology Centers (STC): Integrative Partnerships program supports innovative, potentially transformative, complex research and education projects that require large-scale, long term awards. STCs conduct world-class research through partnerships among academic institutions, national laboratories, industrial organizations, and/or other public/private entities, and via

international collaborations, as appropriate. They provide a means to undertake important investigations at the interfaces of disciplines and/or fresh approaches within disciplines. STC investments support the NSF vision of advancing discovery, innovation and education beyond the frontiers of current knowledge, and empowering future generations in science and engineering.

Centers provide a rich environment for encouraging future scientists, engineers and educators to take risks in pursuing discoveries and new knowledge. STCs foster excellence in education by integrating education and research, and by creating bonds between learning and inquiry so that discovery and creativity fully support the learning process.

NSF expects STCs to demonstrate leadership in the involvement of groups traditionally underrepresented in science and engineering at all levels within the Center. To achieve their diversity objectives, STCs are expected to involve individuals from underrepresented groups as members of the Center faculty and as students actively engaged in Center activities STCs are strongly encouraged to form meaningful, substantive and long-term partnerships with minority-serving institution, women's colleges and institutions that primarily serve students with disabilities, thereby providing formal connections with institutions that serve large populations of underrepresented students interested in STEM.

Centers undertake activities that will facilitated knowledge transfer, i.e., the mutual exchange of scientific and technical information among the Center partners and others with the objective of disseminating and utilizing knowledge broadly in multiple sectors.

To date, six competitions have been held to establish NSF Science and Technology Centers. The first two competitions, one in late 1980's and the one in the early 1990's led to establishment of 25 STCs, which are no longer funded as STC centers. A third STC competition was held in 1999 and resulted in five new Centers. A fourth competition resulted in six new Centers in 2002. The centers established in the third and fourth competition have successfully completed ten years and are not anymore funded under the STC program. The fifth competition in FY 2005 added six centers. The most recent competition added five centers in 2010.

Additional information on the STC program is available at the following NSF web page:
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5541.

3. Project Governance

The Awardee will ensure that an efficient and effective STC governing structure is in place throughout the award period to support all critical or significant STC activities. Among the governing components will be the:
* Awardee serving as the Lead Institution,
* STC Director
* STC Management Team, and
* External Advisory Committee (EAC).

4. Governing Responsibilities

The Awardee will ensure efficient and effective management and implementation of all Center responsibilities by the governing components throughout the award period. The Awardee serves as the Lead Institution in the STC and works with the STC Director to ensure the success of the overall program. The Awardee, with support from the STC Director and STC management team, is responsible for planning, operating, and managing the day-to-day activities of the STC, but not limited to the following.
* Managing, staffing, allocating resources, and overseeing general operations of the STC in accordance with the plans submitted to and approved by NSF;
* Assuring that the responsibilities of the STC are met by a management team led by the Center Director and as agreed to by NSF;
* Notifying and gaining approval from NSF for any changes to key personnel or substantive changes in the level of effort of key personnel;
* Holding within ninety (90) days of the effective date of this CA all center members meeting to develop a document that encompasses both Strategic and Implementation plans (referred to as a Strategic and Implementation Plan) and submitting it to NSF in draft form within thirty (30) days of the meeting. Details of the meeting to be coordinated with NSF. The Plan must include statements about the vision, mission, organizational structure, and management and performance goals and indicators of success. It must also include completion timelines, milestones, and deliverables for the initial 60-month award period. The Plan is to be updated annually, building on the accomplishments of the past year and responding to evolving challenges faced by the STC. Goals must include, but need not be limited to:
a) Maintaining the unifying STC intellectual theme as proposed with attention to how the STC's thrust areas are to be integrated with each other and across participating institutions;
b) Integrating STC educational activities into a coherent program with well defined goals, including the relationship of the STC's education and research with other community programs;
c) Integrating the research, education, and knowledge transfer components into a coherent program;
d) Increasing participation of and providing research and educational opportunities to United States citizens, nationals, and lawfully admitted permanent residents, especially women and members of underrepresented groups who are undergraduate and graduate students, postdoctoral researchers, industrial fellows, faculty members from all colleges and universities, and others in the activities of the STC and STC sub awardees; encouraging them to pursue careers in science and engineering; identifying actions that will enhance and ensure ethnic/racial diversity throughout the life of the STC;

e) Maximizing knowledge transfer both at the Lead Institution and among partners, including industry, government, colleges and universities and the public (Knowledge transfer activities involve the mutual exchange of scientific information with the goal of applying the knowledge to the operations or activities of the groups sharing the information and may be accomplished in a variety of ways.);
f) Assuring that a robust and substantive plan is in place for diversity of STC staff and participants at the Lead Institutions and partner sites (Attention must be paid to diversity in filling administrative/management, research, and education positions of the STC at the senior as well as at lower levels.;
g) Assuring effective management of the STC, including mechanisms for integrating individual researchers and institutions into a cohesive STC, focusing STC activities, selecting and integrating related research projects, allocating funds and equipment across all STC activities and among partners, and facilitating the involvement of other scientific and educational groups (When the allocation of funds among the STC's participants involves an internal proposal and review process, the review criteria used by the STC should be consistent with the first two criteria (intellectual merit and broader impact) listed in the STC Program Solicitation (NSF 11-522);
h) Assuring that the disposition of rights to intellectual property created at the STC is consistent with NSF policy. The Intellectual Property Rights Agreement is to be submitted to NSF prior to receipt of an award. This agreement is to also address knowledge transfer and significant intellectual exchanges with other groups.
i) Assuring the implementation of a program of ethics training within the cross-disciplinary and multi-institutional context of the STC for its staff and its subawardee staff, including faculty, visiting faculty, industrial fellows, postdoctoral researchers, and graduate and undergraduate students with training topics to include the nature of the research, methodologies used, ownership of research and ideas, and roles and responsibilities regarding intellectual property; and
j) Assuring continued operation of the STC and its programs in the event of the absence or loss of key personnel and developing thorough procedures for succession and back-up of personnel.

* Establishing an External Advisory Committee (EAC) to provide guidance, advice, and oversight for all of the STC's activities, consistent with its vision, goals, and objectives. The EAC charter must be included in the Strategic and Implementation Plan and any changes to the charter must be communicated to the Lead Program Official for the NSF Program Coordination Team. The EAC membership must, at a minimum:

a) Meet at least annually,
b) Include representation from a wide variety of disciplines (e.g., science, engineering, education) from constituencies served by the STC,,e.g. academic institutions, industry, state and local agencies, national laboratories,
c) Display the diversity of the United States citizenry in its membership, and
d) Not include members with financial, institutional, or collaborative connection(s) to the STC.

* Ensuring the STC Director serves as the liaison between the STC and the National Network of STC Directors and works within the Network to address common goals, problems and opportunities, and facilitate personnel and resource exchanges, support integrated partnerships, and ensure cooperation among Centers toward:
a) Fostering balance among and integration of research, education, and knowledge transfer activities, while avoiding duplication of effort across all STCs;
b) Facilitating interactions to address research, education, and management issues and opportunities, which transcend individual Center capabilities;
c) Serving as the Liaison with private sector, state, local, and national laboratories to identify needs and opportunities and to plan joint implementation strategies, workshops; and
d) Preparing educational materials designed to enhance public understanding of science, engineering, technology, and educational advances that serve society.

* Ensuring all sub-awardee partner institutions function together as an integrated whole, with shared research, education, diversity and knowledge-transfer goals and ensuring excellence in management and expedience in resolution of all issues and concerns among all the sub awardees.

5. Reporting Requirements

The Awardee will provide ad hoc and regular reports as designated by the NSF Lead Program Official and as required by the STC Program. The Awardee will submit all required reports via FastLane using the appropriate reporting category. For any type of report not specifically mentioned in FastLane, the Awardee will use the "Interim Reporting" function to submit reports. The Awardee will ensure that the STC Director meets all reporting requirements with content, format and submission timeline that are agreed by NSF and the STC Director.

Reporting requirements are posted on the NSF STC Program Website at http://www.nsf.gov/od/oia/programs/stc/reports/2009revised_reportingrequirements.pdf . The annual report must be submitted 90 days prior to the end of the current budget period.

6. NSF Ongoing Management and Oversight

The Awardee will ensure full commitment and cooperation among the governing structure components, and all project staff during all ongoing NSF project management and oversight activities. The Awardee will ensure availability of all key partners during any desk or

on-site review as well as timely access to all project documentation. Furthermore, the STC Director and key personnel will participate actively in cross-Center meetings, appropriate workshops organized by NSF, and annual meetings of the National Network of STC Directors.

Change History

Prior Expiration Dates:
Per Amendment 025 on
01/10/2025: March 31, 2026
Per Amendment 024 on
03/29/2024: March 31, 2025
Per Amendment 012 on
09/19/2018: March 31, 2024
Per Amendment 011 on
09/19/2018: March 31, 2019
Per Amendment 010 on
09/13/2018: March 31, 2019
Per Amendment 009 on
08/16/2018: March 31, 2019
Per Amendment 008 on
09/14/2017: September 30, 2018
Per Amendment 006 on
07/27/2016: September 30, 2018
Per Amendment 005 on
09/08/2015: September 30, 2018
Per Amendment 001 on
07/10/2014: September 30, 2018
Per Original Award on
09/17/2013: September 30, 2018

Prior Awarded Funding Amount:
Per Amendment 023 on
07/25/2022: $3,734,931
Per Amendment 022 on
09/16/2021: $285,000
Per Amendment 021 on
07/29/2021: $4,149,922
Per Amendment 018 on
09/10/2020: $249,858
Per Amendment 016 on
07/09/2020: $4,999,907
Per Amendment 015 on
04/23/2020: $21,447
Per Amendment 014 on
07/31/2019: $4,999,907
Per Amendment 013 on
04/18/2019: $97,559
Per Amendment 011 on
09/19/2018: $4,999,907
Per Amendment 010 on
09/13/2018: $299,994
Per Amendment 009 on
08/16/2018: $72,000
Per Amendment 008 on
09/14/2017: $200,000
Per Amendment 007 on
08/10/2017: $4,196,876
Per Amendment 006 on
07/27/2016: $4,087,474

Per Amendment 005 on
09/08/2015: $102,000
Per Amendment 004 on
05/18/2015: $3,980,015
Per Amendment 003 on
03/19/2015: $100,000
Per Amendment 002 on
01/30/2015: $150,001
Per Amendment 001 on
07/10/2014: $3,874,786
Per Original Award on
09/17/2013: $3,832,809

National Science Foundation
2415 Eisenhower Avenue
Alexandria, VA 22314
www.nsf.gov

COOPERATIVE AGREEMENT (CA)

AWARD: ECCS-2025158

EFFECTIVE DATE: September 1, 2020

EXPIRATION DATE: August 31, 2025

PROJECTED TOTAL AWARD FUNDING:

(Subject to availability of funds)
$5,000,000

CUMULATIVE AMOUNT:

$1,000,000

SOLICITATION:

(Incorporated by reference, as amended)

NSF 19-1

Proposal & Award Policies & Procedures Guide - PAPPG

CFDA NUMBER:
47.041

OTHER AWARDS UNDER THIS PROGRAM:

Show List of Awards

AWARDEE: Harvard College, President & Fellows of Harvard University

PROJECT TITLE: NNCI: Center for Nanoscale Systems (CNS)

PROJECT ABSTRACT: https://www.fastlane.nsf.gov/servlet/showaward?award=2025158

Principal Investigator(s)	Proposal No.	Institution (s)
[redacted]	ECCS-2025158	Harvard College, President & Fellows of Harvard University
		Harvard College, President & Fellows of Harvard University

NSF Contact Information:

NSF_Harvard000056

Financial/Administrative questions: e-mail your NSF Grants and Agreements Official, Malia Williams, at malwilli@nsf.gov or call the Division at 703-292-2290 .

Programmatic questions: e-mail your NSF Program Officer, Lawrence Goldberg, at lgoldber@nsf.gov or call the Program Division at 703-292-8339 .

This CA is entered into between the United States of America, represented by the National Science Foundation (NSF), and the above named Awardee pursuant to the authority of the National Science Foundation Act of 1950, as amended (42 USC 1861-1875). This CA is provided electronically to the Awardee. The Awardee is responsible for full compliance with all Programmatic and Financial/Administrative Terms and Conditions as initially stated or as updated over the life of this CA. The Awardee's request to draw down funds under this CA will represent acceptance by the Awardee of all Terms and Conditions of the CA. The Authorized Organizational Representative (AOR) will be electronically notified of any changes to these Terms and Conditions and is encouraged to immediately review these changes and contact the Grants and Agreements Official or Program Officer within thirty days with any questions.

Financial/Administrative Terms and Conditions (FATC):

1) Award Specific FATC:

Programmatic Terms and Conditions (PTC):

1) Award Specific PTC:

Change History

Prior Awarded Funding Amount:
Per Original Award on
08/19/2020: $1,000,000

National Science Foundation
2415 Eisenhower Avenue
Alexandria, VA 22314
www.nsf.gov

COOPERATIVE AGREEMENT (CA)

AWARD: ECCS-2025158

EFFECTIVE DATE: September 1, 2020

EXPIRATION DATE: August 31, 2025

PROJECTED TOTAL AWARD FUNDING:

(Subject to availability of funds)
$5,000,000

CUMULATIVE AMOUNT:

$5,000,000

SOLICITATION:

(Incorporated by reference, as amended)

NSF 19-1

Proposal & Award Policies & Procedures Guide - PAPPG

CFDA NUMBER:
47.041

OTHER AWARDS UNDER THIS PROGRAM:

Show List of Awards

AWARDEE:

PROJECT TITLE: NNCI: Center for Nanoscale Systems (CNS)

PROJECT ABSTRACT: https://www.fastlane.nsf.gov/servlet/showaward?award=2025158

Principal Investigator(s)	Proposal No.	Institution (s)
[redacted]	ECCS-2025158	

NSF Contact Information:

Financial/Administrative questions: e-mail your NSF Grants and Agreements Official, Kapua Hatch, at khatch@nsf.gov or call the Division at 703-292-8159.

Programmatic questions: e-mail your NSF Program Officer, Richard Nash, at rnash@nsf.gov or call the Program Division at 703-292-5394.

This CA is entered into between the United States of America, represented by the National Science Foundation (NSF), and the above named Awardee pursuant to the authority of the National Science Foundation Act of 1950, as amended (42 USC 1861-1875). This CA is provided electronically to the Awardee. The Awardee is responsible for full compliance with all Programmatic and Financial/Administrative Terms and Conditions as initially stated or as updated over the life of this CA. The Awardee's request to draw down funds under this CA will represent acceptance by the Awardee of all Terms and Conditions of the CA. The Authorized Organizational Representative (AOR) will be electronically notified of any changes to these Terms and Conditions and is encouraged to immediately review these changes and contact the Grants and Agreements Official or Program Officer within thirty days with any questions.

Financial/Administrative Terms and Conditions (FATC):

1) Award Specific FATC:

Part 1. Award Specific Financial and Administrative Terms and Conditions (FATC)

1.1. Award Interpretation:

A. Terms and Conditions Incorporated by Reference. At the time of award, all activities under this Cooperative Agreement (CA) are subject to NSF's Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC).

B. Order of Precedence: This Cooperative Agreement (CA) consists of the following terms and conditions in descending order of precedence:

* The terms and conditions of this Cooperative Agreement (as amended)
* Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC), as amended.

C. Changes to Terms and Conditions:

* NSF will notify the Awardee of any changes to the Terms and Conditions that result from changes in federal statute or changes in NSF-wide policy and procedures.
* Changes to the Terms and Conditions of this Cooperative Agreement that are not the result of NSF-wide policy and procedures shall be mutually agreed.
* Deviations from the CA-FATC. To meet the specific needs and requirements of this CA, deviations are provided in full text herein. Any modifications to these deviations shall be incorporated by amendment after consultation with the Awardee.

1.2. Funding and Funding Schedule:

A. Funding:

Contingent on the availability of funds and the scientific progress of the project, it is the intent of the NSF to provide up to $5,000,000 to support the project for the next 60 months in support of Year 6 through 10, in accordance with the original submitted budget.

B. Funding Schedule:

Year 6 $1,000,000
Year 7 $1,000,000
Year 8 $1,000,000
Year 9 $1,000,000
Year 10 $1,000,000

1.3. Participant Support Costs:

Funds provided for participant support may not be diverted by the awardee to other categories of expense without the prior written approval of the cognizant NSF Program Officer. Since participant support cost is not a normal account classification, the awardee organization must be able to separately identify participant support costs. It is highly recommended that separate accounts, sub-accounts, sub-task, or sub-ledgers be established to accumulate these costs. The awardee should have written policies and procedures to segregate participant support costs.

Programmatic Terms and Conditions (PTC):

1) Award Specific PTC:

Part 2. Award Specific Programmatic Terms and Conditions (PTC)

2.1. Project Description:

The Center for Nanoscale Systems (CNS) at Harvard University was created with a clear vision to provide a collaborative multi-disciplinary research environment to support creation and evolution of transformative quantum and nanoscience and technical expertise for national researchers both from academia and industry. CNS core values are to facilitate leading-edge, multi-disciplinary, research and education in the areas of nanofabrication, imaging, and characterization of nanoscale structures, across the disciplines of applied physics, biology, chemistry, electrical engineering, geology, materials science, medicine and physics; and to create a collaborative nanotechnology research community by providing shared instrumentation facilities and infrastructure, expert staff, and educational opportunities conducive to productive scientific engagement. As the New England hub of the NSF National Nanotechnology Coordinated Infrastructure (NNCI), CNS provides cutting-edge tools for research, fostering a strong competitive edge for the nation's investigators. Importantly, CNS serves a broad, diverse, community of users who are focused on meeting the nation's needs in a wide range of next generation technologies. The focus of the team at CNS is to develop specialized tools, processes, instrumentation, and core expertise to help design, characterize, and fabricate novel materials, nanostructures, devices, and systems, going beyond conventional approaches. CNS supports outreach to spur and support R&D by start-ups. CNS has developed and supported a CNS Scholars program, focused on giving young researchers access to CNS collaborative expertise and instrumentation, particularly researchers from underrepresented groups. CNS users are innovators in transformational activities in Quantum Science and Engineering, Nanophotonics, and Translational Bioscience.

2.2. Project Governance and Governing Responsibilities:

The Awardee will ensure that an efficient and effective project governing structure is in place throughout the award period to support all critical or significant project activities. Components of the management structure and the responsibilities include:

A. PI and Site Director: [redacted] Mallinckrodt Professor of Applied Physics and Physics, and Director of the Center for Nanoscale Systems at Harvard; [redacted] has ultimate responsibility for implementation of all aspects technical and administrative of the CNS site. [redacted] serves as a primary liaison for NNCI coordination activities.

B. Co-PI and Site Operations Director: [redacted] (co-PI); Executive Director of the Center for Nanoscale Systems; [redacted] manages the day-to-day operations of the Center. In support of the Director, [redacted] will assume ultimate responsibility for operations and all reporting aspects to the Coordinating office and to NSF. [redacted] will also serve, along with the Director, as a primary liaison for NNCI coordination activities. [redacted] manages the CNS staff.

C. Senior Personnel: [redacted] Associate Director, Nanofabrication; [redacted] manages the CNS cleanroom operations. [redacted] with our fab team helps implement all nanofabrication aspects of the project with emphases on facility development support, coordinating the nanoFab user research communities, and supporting training of fab users internal and external.

D. Senior Personnel: [redacted] Associate Director, Characterization/Imaging and [redacted] Professor of the Practice of Electron Microscopy; [redacted] is responsible for management of the Imaging Core of the node [redacted] with our imaging team helps implement all imaging/analysis aspects of the project with emphases on instrumentation development support, coordinating the characterization user research communities, and supporting training of users internal and external.

E. Associate Director Administration: [redacted] will help manage oversee financial reporting and compliance as well as with

her team support user services and outreach activities. [redacted] with her team will coordinate user registration, user management, usage data collection and support NNCI communication and reporting.

F. Education Coordinator: [redacted] has primary responsibility for developing and administering or REU, REV, and CNS Scholars programs with the help of our admin team and the Operations director. [redacted] also helps coordinate outreach activities.

G. External Advisory Board: An external advisory board has been created to gain insight and input from outside academics and industry. The current members are [redacted], Northwestern University, [redacted] Columbia University, [redacted] UIUC, [redacted], DOD- LPS, and [redacted] BNL. The boards role is to offer high-level advice on center goals, best practices, emerging opportunities, and all other aspects of facility operations and organization.

H. University Executive Committee: CNS is also locally managed by a University Executive Committee which is co-chaired by [redacted] Dean of Science in the Faculty of Arts and Sciences, and [redacted] Dean of the School of Engineering and Applied Sciences. The Executive Committee, determines Harvard funding for CNS, makes major decisions about its structure, and has sufficient resources and authority to ensure its success

I. Faculty/User Committee: CNS also gets insight directly from the userbase via a rotating forum focused on users. The committee guides core science programs, informs our strategy on what types of facilities should be developed and how our tools evolve. It is the primary mechanism for obtaining input from the user base.

2.3. Role of the Coordinating Office:

The role of the Coordinating Office, located at the Georgia Institute of Technology NNCI SENIC site, is to enhance the impact of this investment as a coordinated national infrastructure of user facility sites for nanotechnology. The Director of the Coordinating Office is a key individual for developing management strategies and operational plans in concert with the Site Directors of the individual user facilities, and serves as a principal contact person with the NSF.

2.4. Reporting and Review Requirements:

The Awardee will provide regular reports as designated in this CA with the content, format, and submission time line established by the cognizant NSF Program Officer. The Awardee will submit all required reports via Research.gov using the appropriate reporting category; for any type of report not specifically mentioned in Research.gov, the Awardee will submit such reports using the "Interim Reporting" function.

A. Annual Progress Report:

The Awardee will submit an Annual Progress Report via Research.gov at least 90 days before the end of the current period of performance of each year. The annual report will include a discussion of the accomplishments of the NNCI site during the reporting year and the progress made in achieving the project's vision and goals, supported by narrative, statistical, and budgetary expenditure information underlying all areas of activity for the reporting year. The annual report will also contain a program plan and budget for the next-year's funding increment. The cognizant NSF Program Officer is responsible for approval of the annual report and will notify the Awardee electronically when approved. The release of the yearly increment of funding is contingent upon the NSF Program Officer's approval of the annual report and satisfactory annual site review.

B. Annual Reviews:

An annual review will be conducted by a reverse-site-review panel of external experts at NSF or virtually. The review schedule, content, and participation of key personnel will be determined by the Site Director and the cognizant NSF Program Officer.

C. Final Report:

In lieu of an annual report in year 10, a final report detailing cumulative progress over the term of this award will be due within 90 days of the expiration date of this CA.

2.5. Awardee Support of Ongoing Management and Oversight:

The Awardee will ensure full commitment and cooperation among the governing structure components, and all project staff during all ongoing NSF project management and oversight activities. The Awardee will ensure availability of all key institutional partners during any desk or on-site review as well as timely access to all project documentation.

2.6. NSF Responsibilities:

The NSF has a major responsibility for providing the Awardee general oversight and monitoring to help assure effective performance and administration. Unless NSF reserves specific responsibility, by a condition of this CA, for coordinating or integrating the project activities with other activities or sharing responsibility for certain aspects of the project, all such responsibilities remain with the

Awardee.

In accordance with the NSF's responsibilities under this CA, the following conditions apply:

A. Performance of work under this CA shall be subject to the general oversight and monitoring of the cognizant NSF Program Officer. This NSF involvement may include, but is not limited to:

* Participation in resolution of governance, programmatic, technical, managerial, and/or scheduling concerns;
* Technical guidance and/or advice, especially with regard to the integration, collaboration, and coordination with other education projects funded by NSF;
* Review and, where required by the CA, approve technical reports and information to be delivered by the Awardee; and
* Approvals as required under the National Science Foundation Cooperative Agreement - Financial and Administrative Terms and Conditions (CA-FATC)

B. NSF involvement must be consistent with the terms and conditions as stated in this CA. The cognizant NSF Program Officer does not have the authority to and may not:

* Request additional work outside the general scope of the CA;
* Issue instructions that constitute a change as defined in the CA-FATC, under "Significant Project Changes";
* Cause an increase or decrease in the estimated cost or time required for performance under the CA; and
* Change any of the expressed terms and conditions of the CA.

C. If, in the opinion of the Awardee, any instructions or requests issued by the NSF Program Officer are within one of the categories as defined in (1) through (4.) in the above paragraph, the Awardee shall not proceed but shall notify the NSF Grants and Agreements Official and shall request, if appropriate, modification of the CA in accordance with the CA-FATC, under "Changes - Limitation of Funds".

2.7. Project-specific terms and conditions:

A. Health, Safety and Security:

* The Awardee shall take all reasonable precautions in the performance of the work under this CA to protect the health and safety of employees and of members of the public from all hazards and to minimize danger to life and property, and shall comply with all applicable health, safety, and fire protection laws, regulations, and requirements.
* The Awardee shall maintain an accurate record of all cases of death, occupational disease or injury arising out of, or in the course of, employment incident to performance of the work under this CA. In addition, the Awardee shall promptly furnish the NSF Program Officer and Grants and Agreements Officer with the details of any deaths, serious occupational diseases, injuries resulting in permanent handicaps, and major accidents occurring in connection with this CA.
* The Awardee shall maintain an accurate record of all security incidents. In addition, the Awardee shall promptly furnish the NSF Program Officer and Grants and Agreements Officer with the details of any major security incidents that involve facilities or personnel.

B. Information Security:

The Awardee shall submit a written summary of its IT security program to the NSF Program Officer within six months of the effective date of this agreement. Any significant changes to this IT security program shall be summarized in the Annual Report.

Change History

Prior Awarded Funding Amount:
Per Amendment 005 on
07/23/2024: $1,000,000
Per Amendment 004 on
07/27/2023: $1,000,000
Per Amendment 003 on
09/15/2022: $1,000,000
Per Amendment 002 on
07/26/2021: $1,000,000
Per Original Award on
08/19/2020: $1,000,000

National Science Foundation
2415 Eisenhower Avenue
Alexandria, VA 22314
www.nsf.gov

COOPERATIVE AGREEMENT (CA)

AWARD: PHY-2116679

EFFECTIVE DATE: August 1, 2021

EXPIRATION DATE: July 31, 2026

PROJECTED TOTAL AWARD FUNDING:

(Subject to availability of funds)
$3,499,997

CUMULATIVE AMOUNT:

$699,998

SOLICITATION:

(Incorporated by reference, as amended)

NSF 20-605

Focused Research Hubs in Theoretical Physics

CFDA NUMBER:
47.049

OTHER AWARDS UNDER THIS PROGRAM:

Show List of Awards

AWARDEE: Harvard College, President & Fellows of Harvard University

PROJECT TITLE: Institute for Theoretical, Atomic, Molecular and Optical Physics (ITAMP)

PROJECT ABSTRACT: https://www.fastlane.nsf.gov/servlet/showaward?award=2116679

Principal Investigator(s)	Proposal No.	Institution (s)
[redacted]	PHY-2116679	Smithsonian Institution Astrophysical Observatory
		Smithsonian Institution
		Harvard College, President & Fellows of Harvard University
	NSF_Harvard000063	Harvard College, President & Fellows of Harvard University

Vasili Kharchenko Smithsonian Institution Astrophysical Observatory

NSF Contact Information:

Financial/Administrative questions: e-mail your NSF Grants and Agreements Official, Pamela Conyers, at pconyers@nsf.gov or call the Division at 703-292-5329 .

Programmatic questions: e-mail your NSF Program Officer, Bogdan Mihaila, at bmihaila@nsf.gov or call the Program Division at 703-292-8235 .

This CA is entered into between the United States of America, represented by the National Science Foundation (NSF), and the above named Awardee pursuant to the authority of the National Science Foundation Act of 1950, as amended (42 USC 1861-1875). This CA is provided electronically to the Awardee. The Awardee is responsible for full compliance with all Programmatic and Financial/Administrative Terms and Conditions as initially stated or as updated over the life of this CA. The Awardee's request to draw down funds under this CA will represent acceptance by the Awardee of all Terms and Conditions of the CA. The Authorized Organizational Representative (AOR) will be electronically notified of any changes to these Terms and Conditions and is encouraged to immediately review these changes and contact the Grants and Agreements Official or Program Officer within thirty days with any questions.

Financial/Administrative Terms and Conditions (FATC):

1) Award Specific FATC:

A. Funds provided for participant support may not be diverted by the awardee to other categories of expense without the prior written approval of the cognizant NSF Program Officer. Since participant support cost is not a normal account classification, the awardee organization must be able to separately identify participant support costs. It is highly recommended that separate accounts, sub-accounts, sub-task, or sub-ledgers be established to accumulate these costs. The awardee should have written policies and procedures to segregate participant support costs.

B. Costs of entertainment, amusement, diversion and social activities, and any costs directly associated with such costs (such as meals, lodging, rentals, transportation and gratuities) are unallowable. When certain meals are an integral and necessary part of a conference or meeting (i.e., working meals where business is transacted), grant funds may be used for such meals. Grant funds may also be used to furnish a reasonable amount of coffee or soft drinks for conference or meeting participants and attendees during coffee breaks. No NSF funds may be spent on meals or coffee breaks for intramural meetings of an organization or any of its components, including, but not limited to, laboratories, departments and centers.

C. The Foundation authorizes the awardee to enter into the proposed contractual arrangements and to fund such arrangements with award funds up to the amount indicated in the approved budgets. Such contractual arrangements should contain appropriate provisions consistent with Articles 8.a.4. and 9 of the NSF Cooperative Agreement Financial & Administrative Terms and Conditions (CA-FATC) dated November 12, 2020, as well as any special conditions included in this award.

Programmatic Terms and Conditions (PTC):

1) Award Specific PTC:

1. Key Personnel.

Except for the Principal Investigator (PI) identified in the award, requests to make any changes to key personnel, organizations, and/or